3. Distance

Program Name: Distance.java   Input File: distance.dat

You will calculate the average distance between two randomly chosen points. You will be given a number to seed a random number generator with and the number of simulations to run. Each simulation will involve generating the integers X1, Y1, X2, and Y2 in that order as values greater than or equal to 0 and less than 1000. Then calculate the distance between them, truncating that distance to 3 decimal places. For each test case, print the average distance between the two points.

Input

The first line will contain 't' the number of test cases to follow. Each test case will consist of a single line containing r and n. r is the number to seed the Random object with and n is the number of simulations to run.

Output

For each test case print out the average distance, truncated to three decimal spaces.

Constraints
```
1 <= t < 10
0 < r, n < 10^8
```

Example Input File
```
2
12087 400
7418 978
```

Example Output to Screen
```
553.994
525.789
```